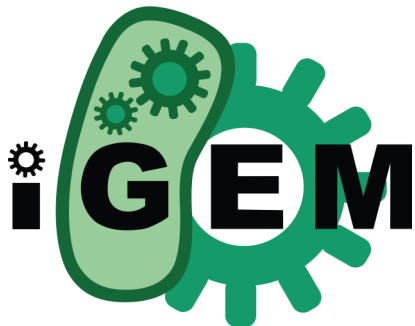


## iGEM

The International Genetically Engineered Machine (iGEM) Competition is an event that brings together teams of high school and university students to work on projects using synthetic biology. Every year, hundreds of teams from all over the world work all summer long to develop projects that take advantage of synthetic biology and use it as a tool to create a positive impact in their communities.

iGEM is not only a competition, it's also a foundation that aims to educate people about synthetic biology, support its advancement, promote collaboration as well as create a community for people interested in synthetic biology.

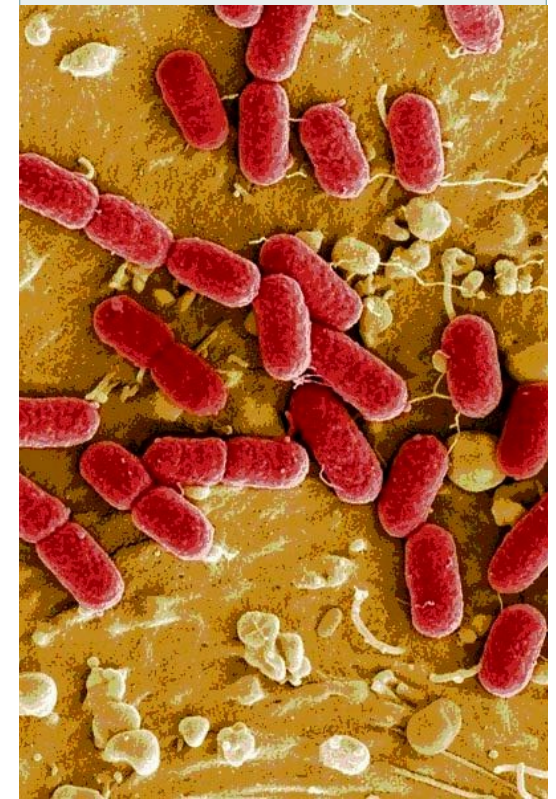


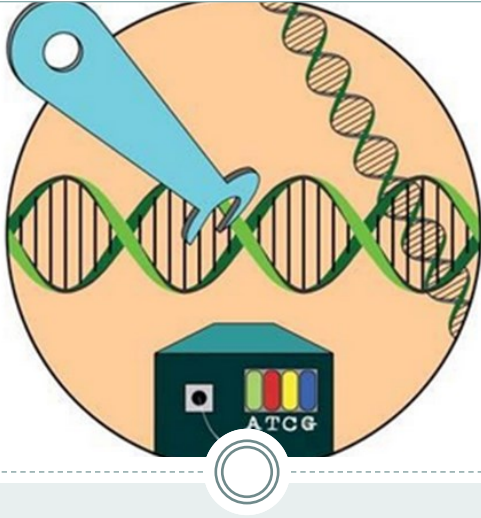
For more information about iGEM, visit  
<https://igem.org>

For more information about our project, visit  
our website:  
<https://2016.igem.org/Team:NYU-AD>



## PROKARY-EAT: A Shiga-Like Toxin Detection Method





## What is Synthetic Biology?

- Biology + Engineering
- Design and assemble biological parts to make machines, modules, systems, etc.
- New, emerging scientific field
- Incorporates artificial design of living organisms for industry & research
- Based on DNA sequencing and synthesis to create organisms that serve a specific function

## OUR PROJECT

Our project aims to develop a portable, device to detect the presence of Shiga-like toxin (SLT) in food.

The reason behind creating this device is that in many developing countries people depend on reasonably priced and conveniently available street food. However, lack of action taken by governments to regulate the safety of street food has led to the prevalence of severe street food-related illnesses. One of the primary microbial contaminants in street food is *Escherichia coli* (*E. coli*) O157:H7, which acts by secreting SLT.

Currently, there is no detection method for SLT outside of a lab setting, putting consumers of street foods at risk.

Our team hopes to change that by implementing this device in restaurants and street food stands to help prove their food is safe for consumption.

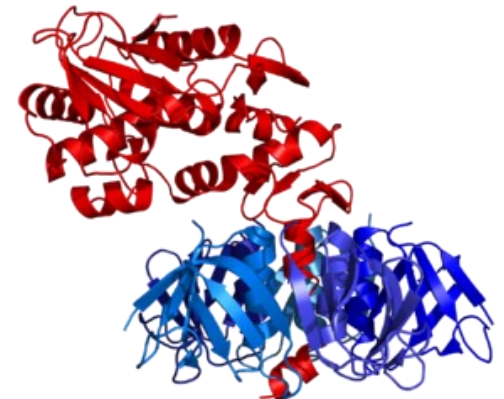


## SHIGA TOXIN

Shiga toxin is one of the most potent toxins known. It is made by Shiga toxin-producing *E. coli* (STEC) and is responsible for food borne illness.

STEC infections can be mild but some are severe or sometimes even life-threatening. Around 5–10% of those infected develop hemolytic uremic syndrome (HUS), a potentially life threatening kidney disease. STEC that cause human illness are found mostly found in cattle and sometimes birds that pick up the bacteria from the environment and spread it.

This STEC does not affect the animals. Infections are spread by swallowing STEC. Exposure to STEC can be through consumption of contaminated food, consumption of unpasteurized milk, combustion of infected water, contact with cattle and, contact with feces of infected people or animals.



*A and B subunits of Shiga Toxin  
(ribbon diagram modeled by the Protein data Bank)*